Background

Periodontitis is a chronic inflammatory disease which results in the destruction of the supporting structures of the periodontium and tooth loss. This condition occurs usually in adults who have a high accumulation of plaque and calculus deposits in the oral cavity. In the prolonged presence of deposits, the bacteria release endotoxins like lipopolysaccharides which cause the inflammatory responses to the host. These endotoxins cause increased oxidative stress and release of reactive oxygen species. The antioxidant enzymes Superoxidase dismutase (SOD) and Glutathione (GSH) values are affected during periodontitis. The endotoxins also can enter the blood stream and affect the other systemic conditions. Cardiovascular disease is one of the important systemic conditions associated with periodontitis. Dyslipidemia is a major risk factor for CVD and high serum lipid level is seen in periodontitis patients. Because of oxidative stress DNA damage occurs and there is micronuclei formation in these individuals. The inflammatory mediators considerably reduced after the scaling and root planing procedure which can control the cholesterol level and periodontitis in the patient.

Aim of the Study

The aim of the study is to assess the effect of non –surgical periodontal therapy on serum Antioxidant enzyme levels of Superoxide dismutase (SOD) and Glutathiaone (GSH) and micronucleus frequency in chronic periodontitis patients with or without Dyslipidemia.

Materials and Methods

The study is a longitudinal study which was conducted in Sree Mookambika Institute of Dental Sciences. The study sample was divided into three groups G1 – Healthy Controls, G2 – patients with chronic periodontitis, G3 – patients with Chronic Periodontitis and Cholesterol. Clinical Parameters were recorded at baseline and 3 months postoperatively. The serum level of total cholesterol (TC), triglycerides (TGL), SOD, GSH were also recorded before and after scaling and root planing within 3 months interval. The mean Cytokinesis –Block Micronucleus (CBMN) Assay was performed to detect the extent of DNA damage in the molecular level in patients with cholesterol and periodontitis and healthy controls.

Results

The results showed that there was a considerable reduction of the periodontal parameters such as plaque index (PI), gingival index(GI), probing pocket depth (PPD) and clinical attachment level(CAL) 3 months after scaling and root planing . The level of antioxidant enzymes SOD was increased and the level of GSH was reduced after the treatment. The mean CBMN assay remained unchanged after 3 months post operatively.

Conclusion

The results of the present study suggest that a significant oxidative stress may occur in periodontitis accompanying higher level of endotoxins in the oral environment, predominantly in the periodontal region, with GSH and SOD changes both locally and peripherally. Nonsurgical therapy seems to restore and control the subject antioxidant capacity by locally and systemically modifying the levels of TC,

TGL, GSH and SOD. The periodontal parameters were also reduced after the Non – Surgical Therapy .The findings also suggest that significant relations are present between oxidant status and periodontal status, and that oxidative stress may play an important role in the formation of micronuclei. However, further studies are needed to confirm whether oxidant status is a cause of periodontitis which might be targeted to the therapy of periodontitis.